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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/998,551	11/29/2001	Bryce P. Nelson	09820.155	7980

25005 7590 12/15/2003  
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EXAMINER

RILEY, JEZIA

ART UNIT PAPER NUMBER

1637

DATE MAILED: 12/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

107

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/998,551	NELSON ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Jezia Riley	1637	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 21-27 is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \*    c) ☐ None of:  
         1. ☐ Certified copies of the priority documents have been received.  
         2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
         3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
     a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____.  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>12/10/03</u> . | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 4 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Jordan et al. (Anal. Chem. 1997, 69, pp.4939-4947).

Jordan et al. discloses surface plasmon resonance (SPR) imaging measurements of DNA hybridization adsorption and streptavidin /DNA multilayer formation at chemically modified gold surface.

SPR is used to characterize DNA hybridization adsorption at gold surfaces. Single stranded oligonucleotides are immobilized at gold surfaces (which is viewed to be inclusive of the array of instant claim 2) and the hybridization of biotinylated complements is monitored by SPR.

3. Claims 1, 2, 4 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Thiel et al. (Anal. Chem. 1997, 69, pp. 4948-4956).

Thiel et al. discloses a method for constructing oligonucleotides arrays on gold surface for hybridization experiments with in situ surface plasmon resonance imaging detection. 5'-amine-modified oligonucleotide were coupled to amine –derivatized gold surface. The insitu region of the gold surface was a ½ in. diameter circle which was

large enough to monitor several immobilized oligonucleotide probe spots simultaneously. (see abstract and results and discussion sections).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jordan et al. (Anal. Chem. 1997, 69, pp.4939-4947) or Thiel et al. (Anal. Chem. 1997, 69, pp. 4948-4956) in view of Linsley et al. (6,232,068).

Jordan or Thiel disclose surface plasmon resonance (SPR) imaging measurements of DNA hybridization as discussed above.

Linsley et al. discloses methods and compositions for detecting, monitoring and/or quantifying gene expression using nucleic acid arrays, in particular, by using anti-heteronucleic acid antibodies to detect RNA-DNA duplexes on microarrays. It involves providing a pool of target nucleic acids including but not limited to, total cellular RNA, poly(A).sup.+ messenger RNA ("mRNA"), fractions thereof or RNA transcribed from cDNA; hybridizing the pool of nucleic acids to an array of probe DNA or DNA mimics immobilized on a surface of a solid phase to form heteroduplexes. Measurement of gene expression is made by hybridization of RNA to microarrays consisting of a solid phase on the surface of which is immobilized a population of DNA or DNA mimics. Alternatively, the microarrays consist of a solid phase on the surface of which is immobilized a population of RNA, to which DNA or DNA mimics are then hybridized. Arrays containing double-stranded probe DNA situated thereon are preferably subjected to denaturing conditions to render the DNA single-stranded prior to contacting with the target RNA. RNA can be fragmented by methods known in the art, e.g. by incubation at 60.degree. C. for 0.5 hr with 1 mM ZnCl<sub>2</sub>. to generate fragments of RNA for use as target RNA. (see abstract, summary of invention, col. 13, and claims for examples)

Therefore it would have been obvious to one of ordinary skill in art to prepare RNA arrays or detect RNA target as disclosed by Linsley for the method of Jordan or Thiel. The motivation is as discussed in Linsley (Col. 5 -6, and applications sections)- The methods provides for simultaneously monitoring, detecting and/or quantifying the

Art Unit: 1637

expression of a multiplicity of genes. The levels of transcription for virtually any number of genes may be determined simultaneously. Typically, at least about 10 genes, preferably at least about 100, more preferably at least about 1000 and most preferably at least about 10,000 different genes are assayed at one time. The method achieves rapid and economical determination of the qualitative and quantitative presence of nucleic acids in a complex sample of nucleic acids, it has immediate application to problems relating to the genetic aspects of health and disease in human and other living species. In this application, the sample of nucleic acids is derived from biological sources according to protocols known in the art. For example, nucleic acids samples can include total cellular RNA, poly(A).sup.+ RNA, fractions of mRNA separated from subcellular compartments, infectious agent RNA, and so forth. These naturally occurring nucleic acid samples can be derived from living sources of all types. These applications can be generally divided into medical applications and research applications. Medical applications generally involve examination of known genes of known functions as part of diagnosis or treatment of a patient. Research applications generally involve expression analysis to detect novel genes, novel associations of genes, novel patterns of expression, and so forth.

6. Claims 21-27 are allowed.

7. The references lined through in the PTO-1449 were not provided by applicant

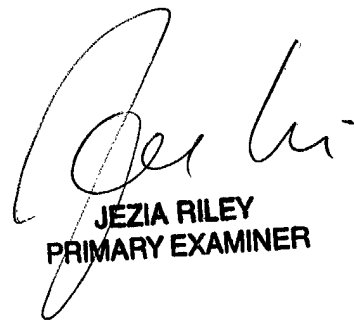
Art Unit: 1637

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jezia Riley whose telephone number is 703-305-6855. The examiner can normally be reached on 9:30AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion can be reached on 703-308-1119. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0196.

Wednesday, December 10, 2003



**JEZIA RILEY**  
**PRIMARY EXAMINER**